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Looking and Loving: The Effects of Mutual Gaze on Feelings of Romantic Love

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In two studies, subjects induced to exchange mutual unbroken gaze for 2 min with a stranger of the opposite sex reported increased feelings of passionate love for each other. In Study I, 96 subjects were run in the four combinations of gazing at the other's hands or eyes, or in a fifth condition in which the subject was asked to count the other's eye blinks. Subjects who were gazing at their partner's eyes, and whose partner was gazing back reported significantly higher feelings of affection than subjects in any other condition. They also reported greater liking than all subjects except those in the eye blink counting condition. In Study II, with 72 subjects, those who engaged in mutual gaze increased significantly their feelings of passionate love, dispositional love, and liking for their partner. This effect occurred only for subjects who were identified on a separate task as more likely to rely on cues from their own behavior in defining their attributes. © 1989 Academic Press, Inc.

"Don't sigh and gaze at me . . . people will say we're in love" (*Oklahoma*, Rodgers & Hammerstein, 1943). The song suggests a variety of ways in which people might deduce that lovers are in love, of which the most reliable is probably the pattern of gaze. Only people in love exchange those long, unbroken, close-up gazes. Numerous studies have demonstrated that indeed people do gaze longer at those they are fond of. No doubt most of these studies were based on the obvious premise that feelings of love cause gazing. However, both the song and much recent research suggests the opposite view. The song is really about how the lovers

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discover their own feelings, by noticing how they are acting. The research on the self-perception of emotion also generates the hypothesis implicit in the song, that the gazing leads to the loving, rather than the reverse.

The general premise behind this research is that emotional feelings do not produce expressive behavior; instead the behavior produces the feelings. This premise can be traced back to Darwin (1872) and William James (1884) and is present in contemporary theories of emotion such as those of Izard (1977), Tomkins (1981) and Zajonc (1985). Although recent theorizing has focused on facial expressions, considerable evidence supports James' original assumption that other behaviors affect emotional feelings in the same way as facial expressions (Laird, 1984).

A number of mechanisms connecting behaviors and feelings have been proposed, and the issue is as yet open. We prefer to view the relationship between emotional behaviors and feelings as most analogous to complex perceptual processes, like depth perception (Kellerman & Laird, 1982; Laird, 1989). In both processes the individual is unaware of the cues, or the process by which the cues lead to experience. All the individual experiences is the feeling, of depth or of an emotion like happiness or anger. In this self-perception view, self-knowledge and feelings arise from the observation and interpretation of actions and the contexts in which these actions occur (Bem, 1967, 1972; Ryle, 1949). As Bem put it, we are in the same position as outside observers of ourselves who must infer our attributes, both temporary and permanent, from our public behavior. However, in contrast to the usual interpretation of Bem's views, we want to emphasize that the process is automatic, and occurs outside the individual's awareness (Laird, 1988).

Much recent research supports the general Jamesian view of the relation between expressive behavior and the quality of emotional experience. A number of studies have shown that if individuals are led to express emotions they will report feeling them (see Laird, 1984, for a review). For example, if people smile, they feel happy, and if they frown they feel angry.

A coordinate body of research has demonstrated that people who are aroused experimentally by adrenalin (Schachter & Singer, 1962; Schachter & Wheeler, 1962), ephedrine (Erdman & Janke, 1978), exercise (Zillman, 1978), or white noise (Donnerstein & Wilson, 1976) act and report feeling more intense emotions. The general self-perception view of emotion (Laird, 1974) is that the feeling of an emotion arises from some combination of expressive behavior, action, and arousal.

Berscheid and Walster's (1974) theory of romantic love was explicitly derived from Schachter's emotion-arousal theory. Berscheid and Walster identify passionate love as an emotional experience which is critically based on the occurrence of arousal. ". . . to love passionately, a person

must first be physically aroused, a condition manifested by palpitations of the heart, nervous tremor, and accelerated breathing. Once he is aroused, all that remains is for him to identify this complex of feelings as passionate love, and he will have experienced authentic love" (Walster & Berscheid, 1971, p. 47).

A number of studies (e.g., Dienstbier, 1979; Dutton & Aron, 1974; White, Fishbein & Rutstein, 1981; White & Kight, 1984) tested the Walster & Berscheid theory by using misattribution procedures. Subjects were placed in arousing situations and then presented with an attractive member of the opposite sex. In the aroused conditions subjects reported feeling more attracted to this person. Despite some questions about the interpretation of these results (Kenrick & Cialdini, 1977), there does seem to be reasonable support (see White & Kight, 1984) for Berscheid and Walter's idea that the experience of romantic love is mediated by physiological arousal.

In light of the evidence with regard to other emotions, we would expect that some patterns of expressive behavior would, in the same way, define the distinctive quality of love. The most striking of these expressive behaviors seem to be those long, deep mutual gazes. Thus, self-perception theory predicts that subjects who are induced to gaze into each others eyes should report feeling more "passionately" attracted to each other.

Considering the distinctiveness of mutual gaze, it is not surprising that there have been other tests of the gaze–love hypothesis. In one of these, Kleinke, Bustos, Meeker, and Staneski (1973) did not actually induce their subjects to gaze at their partners. Instead the subjects were told that they had done so. This produced modest increases in attraction for the partner. In a second study, Kleinke, Staneski, and Berger (1975) actually manipulated how much subjects looked at their partners, by means of differential reinforcement. The reinforcement produced significant changes in looking, but these were not associated with changes in liking. Kleinke et al. (1975) concluded that the effects in their first study were due to subject's expectations about the relation between looking and liking, not by any relationship in reality.

An equally likely explanation is that although Kleinke et al. succeeded in changing looking, the changes did not match the characteristic lover's gaze. Lovers may gaze into each others' eyes almost continuously for 5 or 10 min, whereas the total amount of time subjects in the Kleinke et al. (1975) study looked was only slightly over half of the 2-min interval. Since normal gaze behavior is to look, and then to look away repeatedly, the subjects may have exchanged a series of brief glances, not the long, unbroken gaze that seems typical of romantic love. Thus, the technique used by Kleinke et al. may not have produced the critical gaze conditions for passionate love. Consequently, their study leaves open the possibility

that mutual gaze may be a source of the self-perception of passionate love.

In the first of our studies to test this proposition, opposite sex strangers were asked to gaze into each other's eyes, and then asked how they felt about each other. One important question concerned what the appropriate comparison condition should be. The simple act of attending to a stranger might increase attraction to them, perhaps through increased familiarity (cf. Zajonc, 1968). Thus, it seemed desirable that subjects in the comparison conditions also be gazing at their partner, but not at their eyes. Gazing at the other person's hands was chosen as the comparison condition. Thus the basic comparison was between subjects who were gazing at each other's hands as opposed to those who were gazing at each other's eyes.

Earlier we suggested that the characteristic lover's gaze is mutual. However, it could be flattering to have someone else gaze at you, or it could be sufficient for the self-perception effect to gaze yourself, whatever the other was doing. To test these possibilities, another set of conditions were run in which one subject gazed at the other's eyes, and the other at the hands. The study becomes in effect a two by two design in which one dimension was gaze of one partner (hands or eyes), and the second dimension was gaze of the other partner.

Misattribution research demonstrates that behavior which is ordinarily "interpreted" as a part of an emotion will not have this effect if it is understood as belonging to some other activity or event. Objectively identical gazing behavior might not lead to feelings of love if interpreted as a part of some other activity. As a test of this possibility, in a fifth condition subjects were instructed to count the other person's eye blinks. This was expected to produce objectively similar looking into the other person's eyes, but since it was understood as "counting" rather than "gazing," it would not lead to feelings of love.

STUDY I

Subjects

The subjects were 96 undergraduate volunteers, 48 men and 48 women.

Method

All subjects were recruited to participate in a study on the acquaintance process. They were run in male/female pairs who did not know each other previously. Four to six subjects were scheduled at each session, and randomly paired. If either said that they knew the other more than as "someone they had seen around but never spoken to," those subjects were paired with two of the other subjects present. Each pair was then run in a separate room.

Before entering the room, the two members of the pair were individually instructed about their task, so that each was ignorant of the instructions for the other. All subjects

were told that before the main experiment began there was a brief preparatory exercise they must perform. Then subjects were given the gaze instructions. In the eye gaze conditions they were simply told they should sit quietly and gaze at the other's eyes. In the hands condition they were told that they should gaze at the other's hands. In the eye blink counting condition subjects were told that the experimenter was interested in the effects of a treatment the other subject would receive later, and as a preliminary measure they were being asked to count the other subject's eye blinks for a brief period. All subjects were assigned randomly and independently to conditions, except that subjects in the eye blink counting condition were always paired with a subject in either the eye blink or eye gaze condition.

Subjects then gazed (or counted) for 2 min. At the end of the 2-min period the experimenter conducted one of the pair to a different room, and gave each of them two questionnaires, one to describe their partner and the other to describe their own feelings in relation to their partner. The order of response to the two questionnaires was counterbalanced.

The two questionnaires were adapted from the discussion by Rubin (1973) of the differences between liking and loving. Because the subjects could fill out measures of feelings only after they had finished the gaze manipulation, it seemed desirable to devise measures which could be filled out very quickly, before any effects had dissipated. The Rubin scales seemed to require too much reading time, and hence these bipolar adjective ratings were adopted.

The partner perception questionnaire consisted of 12 bipolar 7-point rating scales, consisting of adjectives such as mature–immature, pleasant–unpleasant, well adjusted–maladjusted, and awkward–graceful. Subjects were asked how characteristic these adjectives were of their partner. The scale describing the subject's own feelings also consisted of 12 7-point scales. Subjects were asked to use these scales to describe how they actually felt while thinking about their partner. These items included such adjective pairs as cold–warm, attracted–repelled, concerned–unconcerned, and distant–close. This cluster was intended to capture feelings of affection for the partner, in contrast to the first cluster which was closer to a measure of liking or respect. If, as the self-perception view would suggest, gaze affected actual feelings most directly, then we would expect the greatest differences on the measure of affection as opposed to the measure of respect.

A total score was calculated for each of these scales, so that higher scores represented endorsement of more positive attributes for the partner (more respect), or more positive feelings when thinking about the partner (more affection).

Results

There were five gaze conditions, representing the four combinations of gaze at eyes or hands and the eye blink condition. The scores for the two questionnaires were analyzed in separate 2 by 2 by 5 ANOVAs, in which the five gaze conditions represented one dimension, and two levels of sex and order of questionnaire response were the two other dimensions.

On the affection scale the only significant effect was the main effect of gaze conditions, $F(4, 80) = 2.50$, $p < .05$, and this represented a very simple effect: The subjects in the gaze–gaze condition reported higher feelings of affection than did the subjects in any of the other four conditions (see Table 1 for the means). The gaze–gaze condition differs significantly from all four other cells, and none of these differ from each other. Thus, as predicted, gazing did affect feelings of affection, but only when the

TABLE 1
AFFECTION AND RESPECT SCORES IN GAZE CONDITIONS

	Gaze condition				
Scale	Subject: Eyes Partner: Eyes	Hands Hands	Eyes Hands	Hands Eyes	Eyeblink Eyeblink or eye gaze
Affection	62.4	53.	52.8	54.6	55.8
Respect	67.4	58.8	54.6	60.5	64.7

subjects were sharing that gaze. Neither gazing nor being gazed at by themselves were sufficient to produce affection.

The fact that the gaze–gaze condition differed significantly ($t = 2.11$, $p < .05$) from the eye blink condition indicates that what is required for the experience of affection is not only a shared gaze, but one which is experienced by the gazer as just that, gazing, rather than something instrumental such as counting eye blinks.

The impact of gaze on the respect measure was less clear. Again there was a significant difference among gaze conditions, $F(4, 80) = 2.59$, $p < .05$. As in the previous analysis, the gaze–gaze condition lead to significantly greater respect than the other gaze combinations. However, in this analysis the eye blink group was lower, but not significantly so, $t = .83$, $p =$ n.s. In addition, there were significant interactions between sex and order $F(1, 80) = 3.70$, $p < .08$ and sex, order, and group $F(4, 80) = 3.04$, $p < .05$, in these analyses. These order effects seem to indicate that males reported greater respect if they filled out the respect questionnaire first whereas females reported greater respect if they filled out the respect questionnaire second, and these effects were greater in the gaze–gaze conditions than any of the others. What these order interactions might mean outside the experiment is much less clear, however. In general then, the same pattern of results was observed for the respect measure as for the affection measure, but much less clearly and coherently.

Discussion

First of all, the results clearly indicate that mutual gaze does indeed increase feelings of affection. If the subjects were gazing into each other's eyes they reported significantly more feelings of attraction, interest, warmth, etc. for each other. Since these effects occurred only when subjects were sharing their gazes, it appears clear that this effect depends on the shared, mutual gaze. Neither being gazed at nor gazing unilaterally oneself was sufficient to produce feelings of affection.

The results for the eye blink–eye blink condition were not as consistent as we might have liked, but still provide reasonable support for the view

that the gazing behavior must be experienced by the gazer as just that. When the gaze is a means to some other end, then it has no effect on feeling.

STUDY II

This first study clearly supported the general self-perception view of romantic love. However, some major improvements of the method seemed worthwhile. One of these concerned the dependent variables. The adjectives which made up the "affection" scale certainly were related to love, but they still did not seem to capture the experience of passionate love very well.

Since the results of the first study were relatively robust, it seemed reasonable to use the Rubin (1970) scales. However, even some items from Rubin's Love scale do not clearly measure passionate love as described by Berscheid and Walster. For example, an item like "I would forgive X for practically anything," may be endorsed by lovers, but it does not deal directly with their feelings. Rubin's items appear to be focused on the way lovers talk and think about each other rather than the immediate experience of the moment. His scale might be described as measuring "Dispositional Love." A second scale was devised to measure the experiences of passionate love.

A second limitation of the first study was that it did not take account of individual differences in the self-perception process. A number of recent studies have demonstrated that some, but not all subjects respond to the most common self-perception paradigms. These differences have been explained by the assumption that there are two quite different kinds of cues that people may use in identifying their own attributes (Laird & Berglas, 1975). One kind of cue arises from the person's own actions. These cues have been called "self-produced," and would include anything the person did, or any responses of their body, and even their appearance. The other kind of cues have been called situational. These consist of any information from the situation which might permit an observer to infer a person's attributes simply from knowing that they were in a particular situation.

There is considerable evidence that individual differences in response to self-produced or situational cues do exist and affect such things as conformity, response to induced compliance, obesity, and response to placeboes (see Laird, 1984, for review). We would expect such differences to appear in the gaze/love relationship as well. Since gazing is clearly a self-produced cue, we would expect that only subjects who were more responsive to self-produced cues would feel more love when gazing. Consequently, identifying subjects' characteristic cue response seemed important.

In previous studies one of the self-perception procedures has been used to assess cue response, and thus to predict response to a different self-perception procedure. The most often used and most convenient of these procedures is the expression manipulation which was also used here. In this procedure, subjects are induced to smile and frown, and then asked to report their mood. Subjects who report feeling happier and angrier, respectively, are then presumed to be responsive to self-produced cues, while the remainder are presumed to be more responsive to situational cues (e.g., Duncan & Laird, 1977, 1980; Kellerman & Laird, 1982; Laird, Wagener, Halal, & Szegda, 1982).

If subjects' response to self-produced and situational cues was to be used to predict their response to the mutual gaze, it seemed reasonable to also assess subjects' response to a situational cue for love. In this study, then, we varied orthogonally both the self-produced cues of mutual gaze, and the situational cues of, in this case, the physical environment. Specifically, subjects were run in two otherwise identical rooms, one of which was dimly lighted and had "romantic" music playing softly in the background.

The second study differed from the first, then, in that (1) the measures of love were more elaborate, (2) the subjects' characteristic responses to self-produced and situational cues were measured, and (3) both the self-produced cues of gaze and the situational cues of room character were manipulated. Only the mutual gaze, and as a comparison, hands–hands conditions were run in this study.

Method

Subjects. Thirty-six male and thirty-six female undergraduate volunteer subjects were tested in pairs (one male and one female). None of the subjects were acquainted at the time of testing. Four other subjects were tested but not included in the study because they became aware of the actual purposes of the procedure.

Procedure. Prior to testing, subjects were randomly assigned (in pairs) to one of four experimental conditions. Subjects were tested either in a dimly lit room with music or in a room with normal illumination and no music and were asked to gaze either at their partner's hands or eyes.

Subjects were told the experiment was investigating extra sensory perception (ESP) and that the principal task involved "sending" and "receiving" symbols. Other procedures were explained as important controls of factors potentially affecting ESP, or as different kinds of "tuning" procedures which might increase ESP.

Following presentation of the cover story, subjects were separated while they responded to initial measures of loving and liking of their partner. The scales included Liking and (Dispositional) Loving items drawn from Rubin's (1973) Liking and Loving Scale. Randomly dispersed throughout this scale were additional "Passionate" love items. These items were devised following Berscheid and Walster's (1974) discussion, and five detailed interviews of undergraduate couples similar to the intended subjects, on passionate love experience. All the items concerned elements that were present in all the interviews. For example, all

interviewees included arousal or excitement in descriptions of their experience. Therefore, one item was "When I see ▬▬, I feel excited."

Subjects responded to all scales by making a slash on a 6-in. line, the end points of which were labeled "Not At All" and "Very Strongly." The subject's score on each item was the distance in quarter inches of the slash from the Not at All end. Thus, scores on each item could range from 0 to 24. These linear scales were chosen because they minimized the subjects ability to recall their ratings. If subjects recalled their earlier responses, they might have been reluctant to report changed feelings. Summary scores for each scale were calculated.

After subjects completed the scales, ostensibly as an ESP "tuning" procedure, subjects were asked to gaze into their partner's eyes (or at their hands) for 2 min. Subjects were unaware of the instructions to the other subject. Following these instructions, the subject pairs were seated opposite each other in a room which had either normal illumination with no music playing or was dimly lit with soft music playing (a 2-min segment of Keith Jarrett's "Live at Koln" album). They were observed through a one-way mirror to ensure that they continued to gaze as instructed. After the 2 min were over, subjects were again separated, and asked to fill out the scales a second time.

In order to keep the cover story plausible, subjects next did an ESP sending task. When this was complete, subjects were told a new tuning procedure would be attempted, which was in fact the expression manipulation task. Subjects were told that facial muscle activity might affect ESP as it did other perceptual processes. To test this possibility they would be asked to contract and relax different muscles on different trials. These contractions actually produced smile and frown expressions.

Subjects were randomly assigned to receive the smile or frown first, then the trials simply alternated. For four trials in the smile condition, subjects were asked to contract the muscles in their cheeks by drawing the corners of their mouth back and up. In the frown condition, subjects were asked to contract the muscles between their eyebrows by drawing their eyebrows together and down. Also, they were asked to contract the muscles at the corner of their jaws by clenching their teeth. Between trials, subjects were asked to write down the symbol they thought the experimenter was sending and then asked to fill out the Nowlis-Green (1966) Mood Adjective Checklist.

Following procedures used in previous studies (e.g., Duncan & Laird, 1977, 1980; Kellerman & Laird, 1982; Laird et al., 1982) total values were calculated for each of the Aggression, Surgency, and Elation factors on the MACL for each trial. The set of values for the first "frown" and "smile" trials were assessed separately from the set of values for the second "frown" and "smile" trials. For each pair of trials, the Surgency and Elation values of the "frown" trial were subtracted from those of the "smile" trial; the Aggression value of the "smile" trial was subtracted from the Aggression value of the "frown" trial. These two difference scores were then added, to produce one score representing the overall difference in feelings between the frown and smile trials of the pair. These scores were positive if subjects felt happier in the smile condition and angrier in the frown condition. A subject received two such scores, one for each pair of a smile and a frown trial.

All subjects whose scores were both positive were considered more responsive to self-produced cues. Subjects with two negative scores or with one positive and one negative score were considered more responsive to situational cues. Since this scoring was done after the experimental session, the experimenter was entirely unaware of the subject's cue response group during the gaze procedure. Finally, subjects were asked to fill out a questionnaire assessing the extent to which they were aware of the actual purposes of the experiment, and debriefed.

Results

The sum Liking, Dispositional Love, and Passionate Love scores were each separately analyzed in a five-way analysis of variance in which gaze condition (eye vs hand), situation condition (romantic vs non-romantic), cue response group (self-produced vs situational), and sex were between subject variables and pre-post scores was a within subject variable. Separate planned comparisons (Keppel, 1973) of the effects within each of the two cue response groups were performed, since the basic predictions were of a significant effect of the eye gaze condition among self-produced cue responders and of a significant effect of the situation condition among situational cue responders. There were no significant main effects or interactions involving subject gender, in any of the analyses.

Passionate Love. As predicted, scores on Passionate Love items changed as a function of the gaze condition and cue response group. There was a significant three-way interaction of cue response group by gaze condition by pre-post scores, $F(1, 56) = 8.58$, $p < .01$ (see Table 2 for mean change scores). The self-produced cue groups significantly increased reports of Passionate Love pre to post in the mutual gaze condition, $F(1, 56) = 44.52$, $p < .01$, but not in the hand gaze condition. Situational cue subjects also increased reports of Passionate Love slightly in the eye gaze condition, not significantly, and did not change in the hand gaze condition.

The second prediction, that the situation would affect feelings of Passionate Love, was also supported, although the pattern was somewhat unexpected. The three-way interaction of cue response group by situation condition by pre-post scores was not significant. However, the two-way interaction of situation condition by pre-post scores was significant, $F(1, 56) = 11.27$, $p < .01$ (see Table 3 for means). Both situational, $F(1, 56) = 13.64$, $p < .01$, and surprisingly, the self-produced cue subjects, $F(1, 56) = 20.75$, $p < .01$, reported more Passionate Love on post measures than on pre measures in the romantic condition. Neither group changed significantly in the drab condition.

Dispositional Love. It was predicted that mutual gaze and situational variation would have a similar, though perhaps less powerful effect on Dispositional Love than on Passionate Love. Neither the three-way interaction of expression group by gaze condition by pre-post scores nor the three-way interaction of situation condition by expression group by pre-post scores were significant. However, the planned comparisons indicated that there was a significant effect of gaze in the self-produced group. Their Dispositional Love Scores increased in the mutual eye gaze condition, $F(1, 56) = 6.83$, $p < .05$, and not in the hand gaze condition.

TABLE 2

CHANGE IN PASSIONATE AND DISPOSITIONAL LOVE AND LIKING SCORES AS A FUNCTION OF GAZE AND CUE RESPONSE GROUP

Scale: Cue response group: Gaze condition	Passionate		Dispositional		Liking	
	Self-produced	Situational	Self-produced	Situational	Self-produced	Situational
Eyes–eyes	25.6*	6.8	11.9*	−1.3	10.2*	−11.1*
Hand–hand	−3.0	0.8	−1.7	−5.4	−.9	4.7

* Change in this cell significantly different from 0, $p < .05$.

TABLE 3

CHANGE IN PASSIONATE AND DISPOSITIONAL LOVE AND LIKING SCORES AS A FUNCTION OF SITUATION AND CUE RESPONSE GROUP

Scale: Cue response group: Situation condition	Passionate		Dispositional		Liking	
	Self-produced	Situational	Self-produced	Situational	Self-produced	Situational
Romantic	16.7*	14.3*	5.7	2.1	5.0	6.7
Drab	6.0	−1.3	4.4	−8.7	1.4	−10.8*

* Change in this cell significantly different from 0, $p < .05$.

Romantic vs drab situations did not affect scores on Dispositional Love significantly in any group.

Liking. The results for the Liking items mirror the results for the Passionate Love and Dispositional Love items, although the effects were less robust than those for Passionate Love. There was a significant three-way interaction of cue response group by gaze condition by pre-post scores, $F(1, 56) = 7.36$, $p < .05$. Separate comparisons indicated that self-produced cue subjects significantly increased Liking for their partner pre to post in the eye gaze condition, $F(1, 56) = 4.29$, $p < .05$, but not in the hand gaze condition. In contrast, the situational cue group did not change in the hand gaze condition and decreased Liking in the eye gaze condition, $F(1, 56) = 5.56$, $p < .05$.

Situational variation also had an effect on Liking. Although the three-way interaction of situation condition by cue response group by pre-post scores did not reach significance, there was a significant two-way interaction of situation condition by pre-post scores, $F(1, 56) = 5.52$, $p < .05$. In separate planned comparisons it was found that neither self-produced nor situational groups increased Liking significantly in the romantic situation. Self-produced cue subjects also did not change significantly in the drab condition. However, the situational group decreased Liking for their partner in the drab condition, $F(1, 56) = 7.20$, $p < .05$.

There were significant main effects for gaze in all three sets of analyses. These reflected both the changes produced by the eye gaze manipulation and the fact that subjects in the eye gaze condition began at a higher level, despite their random assignment to conditions. These differences in pre scores raise the possibility that the results were an artifact of starting position rather than an effect of the manipulation. To test the effect of initial level, pre-test scores were correlated with change scores. It was found that pre-test scores were negatively correlated with changes, $r = -.19$, n.s. for Passionate Love, $r = -.43$, $p < .01$ for Dispositional Love, and $r = -.44$, $p < .01$ for Liking. In all three cases, higher pre-test scores predicted smaller increases or, usually, decreases. Thus, the higher pre scores in the eye–eye condition by themselves would have produced an effect opposite to that actually produced by the mutual gaze. Subjects in the eye gaze group who had higher means on pre-test scores would have been less, rather than more, likely to increase Passionate Love ratings. Note also that both self-produced and situational cue groups had higher pre scores in the eye gaze condition, but only the former increased. In fact, in the analysis of Liking scores, the situational cue group declined significantly in the eye gaze condition, probably as a result of the starting position differences and regression toward the mean. Thus, the differences in initial scores could not have produced the effects of gaze, and in fact may have tended to hide them.

Summary of results. In sum, subjects identified as more responsive to self-produced cues who engaged in mutual gaze came to feel more passionate love and dispositional love and liking for their partner. Subjects who were identified as more responsive to situational cues were unaffected by mutual gaze, on all measures, except Liking which decreased in the mutual gaze condition. However, this result seems to be an artifact of the relatively higher starting scores. Neither cue response group showed a change when in the hand gaze condition on any of these measures.

Results of the situation manipulation were not quite as expected. As predicted, the situational cue group in the romantic situation came to feel more passionate love. However, they did not change feelings of dispositional love or liking. Somewhat unexpectedly, the self-produced cues group in the romantic situation also came to feel more passionate love. In short, then, the situational cues were equally effective for both subjects designated as more responsive to situational cues and those more responsive to self-produced cues.

Discussion

The results of Study II were as predicted, with one modest surprise. The central result was the confirmation of the results of Study I, that when people are lead to engage in mutual gaze, they report increased feelings of love for each other. In addition, Study II demonstrated that this effect occurs only in a portion of the population, those who are most sensitive to self-produced cues. These individual differences are consistent with a number of studies showing similar variations in the effects of expressive behavior for other emotions (cf. Laird, 1984).

These individual differences also render unlikely the possibility that the results were due to subject expectations or experimenter bias. Since the expression manipulation procedure was administered after the gaze portion of the study, and actually scored after the subject had departed, the experimenter could not have known which subjects to bias in which way. Furthermore, the subjects who did not respond to the mutual gaze were the group identified as most responsive to situational cues. This is the group which previous studies indicate is most susceptible to social influence. For example, subjects who are most responsive to situational cues have been found to directly accept suggestions about how they should feel (Duncan & Laird, 1980; Kellerman & Laird, 1982) whereas subjects who respond more to self-produced cues do not accept such suggestions. Thus, if social influences were responsible for the effects, the situational cue group rather than the self-produced cue group should have been most affected. Instead, these results appear to be due to the predicted self-perception effects of mutual gaze on feelings of love.

The surprising aspect of the results of Study II concerned the effects

of the situational manipulation. In the past it has been assumed that people who respond more to self-produced cues would respond less to situational cues. However, in Study II, all subjects responded approximately equally to situational cues. All of the variation was in how much subjects were affected by self-produced cues. This finding is actually consistent with another study (Duncan & Laird, 1980) in which subjects who were identified as more responsive to self-produced cues also were clearly affected by a situational cue. In the Duncan and Laird (1980) study, the two sets of cues were set in opposition, through a placebo message which suggested that subjects should feel a particular way. Subjects who were unaffected by manipulation of their expressions accepted this suggestion straightforwardly. However, subjects who were more responsive to self-produced cues apparently were aware of the placebo message, as well as the actual state of their bodily reactions. Their actual feelings integrated these two sets of cues. Perhaps all people are responsive to situational cues, but do not all respond equally to self-produced cues.

GENERAL DISCUSSION

Both experiments confirmed our basic hypothesis, that gazing into another's eyes leads people to feel increased love. Study I indicates further that this gaze must be mutual. Neither being gazed at nor gazing alone are sufficient to produce increased love. Study I also indicates that the effect of mutual gaze depends on how the gazing behavior is understood. If the gaze is understood in a way which disqualifies it as a sign of love, then the effect does not occur. Study II confirms the general conclusion, but with an important qualification: Mutual gaze leads to feelings of love, but only among people whose feelings generally tend to be based on their own actions.

Mutual gaze represents a new and different kind of cue from those studied in previous research. In earlier studies, the cues which were manipulated were facial expressions, postures, or the bodily cues of arousal. For example, subjects might be induced to smile or to frown. If they then feel happy or angry, the mechanism by which this feeling arises has not been very clear. One possibility has been a relatively mechanical "sensory" connection between proprioceptive feedback and feeling. This view seems to have been held by William James, and perhaps Waynbaum (cited in Zajonc, 1985) and Zajonc (1985). Other conceptions of the process (e.g., Izard, 1977; Laird, 1984) have emphasized a more elaborate "perceptual" process that involved much more cognitive activity. The gaze effects suggest the perceptual model may be more appropriate. Particularly in Study I, the behavior and its associated proprioceptive sensations are not sufficient to produce the feeling. Instead, the behavior must occur in relation to the behavior of the other: The gaze must be

shared, not just performed. In addition, the gaze must be understood as just that, gazing, rather than for example, counting eye blinks. In short, the feeling of romantic love seems to derive from a very complex pattern of activities, all of which must be interpreted or perceived appropriately.

Although the effects of gaze were significant in both studies, they were not overwhelmingly large. But then, according to a self-perception view, they should not have been. The general self-perception assumption is that anything we might use to infer the attributes of others could also contribute to a similar perception of ourselves. Thus, we would expect that a wide variety of other cues could contribute to self-perceptions of love in ordinary life. Study II here demonstrated the possible contribution of a romantic setting. In addition, in real life we would expect lovers to engage in many more activities which might provide self-produced cues, including touching, sharing intimate secrets, and undoubtedly being physiologically aroused as Berscheid and Walster (1974) have suggested. In short, the full-blown experience of passionate love must certainly depend on a much larger constellation of cues than are provided by either gaze or arousal alone. What these studies demonstrate is that prominent among the cues for love are those from mutual gaze.

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